(a) V/G value from a crystal center position to a crystal outer periphery position = 0.16 – 0.18 $mm^2/°C \cdot min$,

(b) G outer / G center $\leq$ 1.10, where V (mm/min) is a pulling speed in the Czochralski method, G (°C/mm) is an average value of an in-crystal temperature gradient in a pulling axis direction within a temperature range from a silicon melting point to 1350°C, G outer is a G value on an outer surface of the crystal, and G center is a G value at the center of the crystal.

2. (Amended) The method for producing a relatively defect free silicon single crystal ingot according to Claim 1, characterized in that said conditions (a) and (b) are adjusted by changing a distance between a heat shielding element equipped in a Czochralski method-based silicon single crystal production device and silicon melt.

3. (Twice Amended) The method for producing a relatively defect free silicon single crystal ingot according to Claim 1, characterized in that said conditions (a) and (b) are adjusted by changing the pulling speed of the silicon single crystal ingot when the silicon single crystal ingot is produced by the Czochralski method.

4. (Twice Amended) A relatively defect free silicon single crystal wafer with decreased grown-in defects, which is obtained from said silicon single crystal ingot according to Claim 1.

C2 2nd

5. (Twice Amended) A relatively defect free silicon perfect single crystal wafer free from grown-in defects, which is obtained from said silicon single crystal ingot according to Claim 1.

C3

7. (Twice Amended) A Czochralski method-based silicon single crystal production device, comprising, in a closed container, a crucible element which stores silicon melt, rotates and is vertically driven, a pulling element for pulling a silicon single crystal ingot, while rotating from said silicon melt, a heating element for heating said crucible, and a heat shielding element for shielding radiating heat from said heating element, wherein the device comprises:

a control means for controlling an in-crystal temperature gradient in a pulling axis direction of the silicon single crystal ingot, and

a drive mechanism for moving the heat shielding element on the basis of an instruction from the control section.

C4

9. (Amended) A heat treating method for a relatively defect free silicon single crystal wafer related to a perfect crystal produced by a Czochralski method, characterized in that a heat treatment temperature at the initial entry of the silicon single crystal wafer to be a target of the heat treatment is 500°C or less, and a temperature ramping rate in a temperature range from the heat treatment temperature at initial entry to an ultimate temperature set in a range of 700°C - 900°C is set to 1°C/min or less.

C.4 cnd

10. (Amended) A heat treating method for a relatively defect free silicon single crystal wafer related to a perfect crystal produced by a Czochralski method, characterized in that a heat treatment temperature at the initial entry of the silicon single crystal wafer to be a target of the heat treatment is 500°C or less, and a temperature ramping rate in a temperature range from the heat treatment temperature at initial entry to an ultimate temperature set in a range of 700°C - 900°C is set to 1°C/min or less, so as to make uniform the distribution of an oxide precipitate density of the silicon single crystal wafer after heat treatment.

11. (Amended) A heat treating method for a relatively defect free silicon single crystal wafer related to a perfect crystal produced by a Czochralski method, characterized in that a heat treatment temperature at the initial entry of the silicon single crystal wafer to be a target of the heat treatment and a temperature ramping rate from the heat treatment temperature at initial entry to an ultimate temperature set in a range of 700°C - 900°C are adjusted so as to adjust the distribution of an oxide precipitate density of the silicon single crystal wafer after heat treatment.